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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,866	10/23/2003	Paul A. Ward	082278-0235 CSDL-0639CN	6735

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EXAMINER	
CORRIELUS, JEAN B	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/691,866	WARD ET AL.	
	Examiner	Art Unit	
	Jean B. Corrielus	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-26,36,41 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-26, 36, 41, and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 24-26, 36, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable ove Kotoulas et al US patent No. 6,751,602 in view of Garcia US patent No. 5,412,985 and further in view of applicant's disclosure page 12, lines 9-17.

As per claim 24, Kotoulas teaches a method and apparatus (Figs. 7 and 8) comprising a vibration sensor (accelerometer) 115 which produces a signal 114 (sinusoidal signal) in response to measurement of a parameter (i.e. noise and vibration); an analog to digital converter 231 which receives said analog signal and converts the analog signal to a digital signal to form a signal "x" considered as the claimed "inphase digital signal" (see output of " signal delay" (fig. 8); a Hilbert transformer approximation device see (fig. 8) which receives said digital signal and produces signal "xhat" (quadrature) component of said digital signal (note that it is an inherent nature of the transformer to introduce a introduce a phase shift to said digital signal an amplitude computation device (including the squarers, the summer, and the SQRT) which receives said "x" and "xhat" (I and Q) components and computes the instantaneous amplitude of said digital signal according to a= SQRT(x^2 + $xhat^2$) see fig. 8. Katoulas does not explicitly teach the additional component of a phase

computation device which receives said x and xhat (I and Q) components and computes the instantaneous phase of said digital signal according to θ=ARCTAN $(Q/I)^{-1}$ and a CORDIC processor is used to compute the phase and amplitude signal. However, Garcia teaches a system using a vibratory accelerometer see col. 3,lines 40-45 configured to generate a sinusoidal signal and to measure the phase and amplitude of a digital signal using a phase computation device and an amplitude computation devices, respectively, see col. 5,lines 27-29 and lines 55-56. It further teaches at col. 6, lines 30-33 that complex mathematic is used to calculate the phase of the signal using the formula arctan of the imaginarycomponent divided by the real component. Given that fact, it would have been obvious to one skill in the art to modify Katoulas in the manner suggested by Garcia by using a vibratory sensor to generate the sinusoidal and a phase computation device to compute the phase of the digital signal based on θ=ARCTAN (Q/I) in order to provide proper indication of direction of a vibrating and noise signal so as to adjust system parameter so as to counteract the effect of such vibration/noise. In addition, at page 12, lines 9-17, applicant acknowledges that a CORDIC processor is a well known device used in signal processing for fast digital trigonometric computations. Given that it would have been obvious to one skill in the art to incorporate such a teaching in Katoulas and Garcia in order to perform fast digital trigonometric computations.

As per claim 25 it is an inherent nature of the Hilbert transformer to introduce a predetermined delay into said “xhat” (quadrature) component of the digitized signal.

As per claim 26, the system further includes a delay device which introduces said predetermined delay into said "x" (I) component see fig. 8.

As per claim 36, see claim 24. In addition, Kotoulas teaches a filter 232 to attenuate out of band noise in said signal and a further includes a delay device which introduces said predetermined delay into said"x" (I) component see fig. 8.

As per claim 41, see claim 24. In addition, note that the analog signal generated by Katoulas inherently includes both a phase and an amplitude of said parameter(inherent characteristics of the sinusoidal siganl).

As per claim 42, see claim 24. In addition, Katoulas teaches a filter 232 to attenuate out of band noise in said signal and a further includes a delay device which introduces said predetermined delay into said"x" (I) component and the analog signal inherently includes both a phase and an amplitude of said parameter(inherent characteristics of the sinusoidal siganl).

Response to Arguments

3. Applicant's arguments,filed on 3/18/08, with respect to the rejection under the Kotoulas 's reference have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Katoulas et al, as set forth above. Applicant further argues that garcia does not teach calculating the Phase of a signal. However, at col. 6, lines 30-33, Garcia clearly teaches that complex mathematic is used to calulate the phase of the signal using tan-1 (imaginary/real). Given such a teaching, examiner maintains that one of ordinary skilled in the art would have been motivated to use such a complex

mathematic, as suggested by Garcia to compute the phase **any signal** (primarily the Kotoulas et al's signal) for the reason set forth above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Monday-Thursday from 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jean B Corrielus/
Primary Examiner
Art Unit 2611